

CLEA

CHARLES LIGHT ENGINEERING ASSOCIATES, INC.

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ENVIRONMENTAL PROTECTION AGENCY
STATE OF ILLINOIS

Mr. Willard
Division of Air Pollution Control
Naval Armory
East Randolph St.
Chicago, Illinois 60601

Dear Mr. Willard:

I have been asked by Mr. Jordan Pearlman of Acme Barrel Company to answer your letter addressed to him on January 5, 1973 relative to the operations at their plant at 2300 West 13th Street in Chicago.

I have contacted your office previously and indicated that it would not be possible for us to get the information to you by the requested deadline since we are having a certain amount of trouble getting specific information from some of the suppliers of materials to the company.

I discussed this on February 15 with Mr. Laxmi Kesari at a meeting we were in attendance at together. I advised him that I would have this letter in the mail to you as of today. I believe that we will have all of the required information. However, if there is anything that is missing that is required please do not hesitate to contact me and I will attempt to make the information available. The attached document relates directly to your January 5 letter and is in reply section and item by item.

Very truly yours,

Charles A. Licht, P.E.
President

CAL/jg
attachment

I. Spray Booths

- A. There are two general paint systems required in this operation. On the open head drums the interiors are coated either with a phenolic epoxy or an alkyd enamel.

These lining coatings are applied in two of the spray booths located in the plant. On the operating permit application to be submitted these two booths will be called PB1 and PB2. The spray nozzles which are used in this unit will allow the passage of approximately 20 oz per minute of paint. However, this is an intermittent operation and only an average of 3-1/2 drums/minute/booth are painted. The painting cycle which is about 7-8 seconds with the maximum usage of paint in this booth being about .35 gallons per minute. The total paint used in the two booths averages 40 gallons per 8 hour day on a basis of production information.

The spray booths PB3 and PB4 are used to place a second coat of the lining of phenolic epoxy material in the open head drums. These units, utilizing the same type of nozzles, have the capability of spraying paint on the average of about .5 gallon per minute per booth. However, the total of materials used for the second coat on the inside of the open head drums amounts to 50 gallons of paint per 8 hour day. There is a small two compartment booth which is used for painting the inside face of the covers. These booths, PB5 use 18 gallons per day for two coats on the covers.

The enamel type materials are used for the outside coatings of both the open head and tight head drums. In booth PB6 the open head drums with their covers on are sprayed with one of the various enamels indicated on the attached sheet. The estimated usage of paint in this booth is approximately 50 gallons in 8 hours. The booth handling the exterior painting of the open head drums is used to paint 7 drums per minute.

PB6, which is the spray booth for the tight head drum line, is used to spray paint the outside of 8 drums a minute with the enamel type materials. The internals of the tight head drums are not painted. The tight head drums are painted in spray booth PB7. The approximate consumption of enamel in this booth is about 70 gallons a day.

- B. Composition of the paints are in accordance with the listing provided by Mobil Chemical Co. with pencilled in additions indicating the percentage by weight of the various components of the paint.

- C. The percentage of solvents is indicated on the list enumerated above. Solvents are not added before coating. The paints are applied in airless type units where the paints are heated to approximately 160° prior to painting. This precludes the need for the addition of solvents.
- D. We are not certain of the cfm of the exhaust fans of the booths as yet. The name plates are missing and we will have to run some preliminary testing to get some approximate fan capacities.
- E. We do not have the density of the paint.
- F. The dimensions of the spray booths are as follows: PB1 and PB2, approx 5'4" wide, 6'6" long, 7' high - there is a baffled sheet at an elevation of about 2-1/2' off the floor so that the actual booth size is only about 4' vertically. Booths PB3 and PB4 are the same dimensions. Spray booth 5 is made up of a double compartmented booth for spraying the covers is approximately 5'6" wide, 28" deep and 2-1/2' high. The floor of this booth is about 30" off the floor. Spray booth 6 is approximately 7-1/2' wide, 8' long and 8' high. Spray booth 7 in the tight head drum line is approximately 7-1/2' wide, 8' long and 8' high.
- G. In spray booths PB1 and PB2 an average of 3-1/2 drums per minute are painted. In spray booth 3 and 4 3-1/2 drums are painted, insides only in these two booths. Spray booth 5, an average of 7 covers per minute are painted. In spray booth 6 7 drums per minute are painted externally including bottoms and covers. Spray booth 7, 8 drums per minute are painted.
- H. Thicknesses are not known.
- I. See item G.
- J. There are controls in all of these spray booths. Spray booths 1 and 2 are equipped with paint arrestors manufactured by Research Products Inc. of Madison, Wisconsin. These arrestors are Underwriters Lab and Factory Mutual approved. These booths are equipped with approximately 25 sq ft of paint arrestor. Spray booths PB3 and 4 are equipped with approximately 16 sq ft of arrestors. Spray booth 5 is equipped with approximately 5 sq ft of arrestor. Spray booth 6 is equipped with approximately 17 sq ft of arrestors. Spray booth 7 is equipped with a water curtain type of arrestor unit.

II. Bake Ovens

- A. There are five ovens in the plant. Of these five ovens two are actually parallel oven housings with a single heating unit and a single circulating and exhaust system so that for the application we will enumerate this as a single unit.

- B. The approximate combustion volume of the first coat cure oven is 40 cubic feet (oven 1). The combustion volume of the second lining coat cure oven (oven 2) is approximately 100 cubic feet.
- C. The combustion volume of open head outside paint cure oven is approximately 100 cubic feet. The tight head curing oven is a special radiant heat type of unit and does not have a separate combustion space, rather a series of radiant heaters mounted in the walls of the oven itself.
- D. The operating temperatures of the first coat ovens are 360° in oven 1. In oven 2 the operating temperature is approximately 550°. In oven 3 the operating temperature is approximately 300° and in the tight head oven (oven 4) the temperature is 350°.
- E. Rough sketches are enclosed.
- F. Cfm for the exhaust fans are to be determined since we have not been able to get nameplate information.
- G. Retention times are as follows: approx 5 min in oven 1; approx 7 min in oven 2; approx 7 min in oven 3; approx 7 min in the tight head oven 4

III. Baghouses

There are five dust collectors in the plant. These are all of the intermittent type of collectors. We enumerate on the attached table the collector size, and the other data requested in a, b, c, d, and e of your letter.

- F. The plant uses approximately 900 lbs of shot per day.
- G. The blasting equipment operated during normal working hours of approximately 8 hours a day.
- H. There are no records of the dust collected nor are there any records of the frequency which bags are changed, although the maintenance department estimates that their bag life is less than three months.
- J. The bags are shaken twice a day, at the lunch break and at the end of the shift.

I recognize that some of this information is less precise than will be on the application for an operating permit. However, we are still investigating to get some data and if not successful in getting the data we will have to run some test probes into the ducts in order to establish the precise flows.

CAL/jg

CLEA

CHARLES LIGHT ENGINEERING ASSOCIATES, INC.

BAG HOUSES

Home Barrel

CAR BARN

OPEN HEAD DRUM BLASTER

WHEELABRATOR #65KD

144 - 90" x 5" ϕ BAGS

EST 5200 CFM

3:1 air to cloth

Lid Blast

Wheelabrator

96 - 70 x 5" ϕ BAGS

EST - 2700 CFM

3:1 air to cloth

New Plant

Turnblast and Lid Blaster

Wheelabrator #8 Model 70

96 - 70 x 5" ϕ BAGS

EST - 2700 CFM

3:1 air to cloth

Old Blig

Drum Blaster

Wheelabrator #8 Model 112

96 - 112" x 5" ϕ bags

EST 4500 CFM

3:1 air to cloth

New Plant

Drum Blaster (horizontal)

Unknown (Wheelabrator?)

96 - 112' x 5" ϕ

Est 4500 cfm

3:1 air to cloth

SOLVENT%/WT.PIGMENTRESINDRIER641-Y-7A

Mineral Spirits	74.2	Molybdate Orange	Soya Oil Alkyd	Manganese
Xylol	7.5			Cobalt
V M & P Naphtha	18.3			Lead

641-Y-14

V M & P Naphtha	62.0	Med. Chrome Yellow	Tall Oil Alkyd	Manganese
Mineral Spirits	11.0	Molybdate Orange	Linseed Oil Alkyd	Cobalt
Xylol	13.0	TiO ₂	Maleic Rosin	Lead
Solvesso 150	14.0			

641-Y-18

V M & P Naphtha	40.0	Primrose	Tall Oil Alkyd	Manganese
Xylol	60.0	Lt. Chrome	Maleic Rosin	Cobalt
				Lead

641-I-3

Mineral Spirits	66.5	TiO ₂		
V M & P Naphtha	30.8	Carbon Black	Tall Oil Alkyd	Manganese
Xylol	2.7	Iron Oxide		Cobalt
				Lead

641-M-2

Mineral Spirits	85.5	Iron Oxide	Tall Oil Alkyd	Manganese
V M & P Naphtha	11.9	TiO ₂		Cobalt
Xylol	2.6			

641-R-16

Mineral Spirits	10.8	Lithol Rubine	Tall Oil Alkyd	Manganese
V M & P Naphtha	70.4	Carbon Black	Linseed Oil Alkyd	Cobalt
Xylol	14.0	TiO ₂	Melamine	Lead
Solvesso 100	2.4		Maleic Rosin	
Butyl Alcohol	2.4			

601-L-4352-A

Mineral Spirits	12.2	TiO ₂	Tall Oil Alkyd	Manganese
V M & P Naphtha	64.6	Phthalo Blue	Linseed Oil Alkyd	Cobalt
Solvesso 100	9.6	Phthalo Green	Maleic Rosin	Lead
Xylol	13.6			

Acme

SOLVENT%/WT.PIGMENTRESINDRIER601-R-6316-A

Rule 66-VM&P Naphtha	24.5	Molybdate Orange	Tall Oil Alkyd	Manganese
V M & P Naphtha	42.8	BON Red	Linseed Oil Alkyd	Cobalt
TS-28	6.7		Melamine	Lead
Xylol	22.5			
Butyl Alcohol	3.5			

59.5

10.8

30.6

1.7

601-W-4873-B

Xylol	69.0	TiO ₂	Tall Oil Alkyd	Cobalt
Mineral Spirits	15.1	Talc		Lead
V M & P Naphtha	10.8			
Solvesso 100	5.1			

100.0

10.8

10.8

1.7

601-L-4369

Xylol	59.0	Phthalo Blue	Styrenated Alkyd	Cobalt
Toluol	21.0			
V M & P Naphtha	20.0			

100.0

10.8

27.5

1.7

601-B-6263-B

V M & P Naphtha	40.4	Carbon Black	Tall Oil Alkyd	Manganese
H. Flash V M & P Naphtha	23.4	Iron Blue	Linseed Oil Alkyd	Cobalt
TS-28	7.7		Melamine	Lead
Xylol	25.1			
Butyl Alcohol	3.4			

100.0

10.8

30.6

1.7

601-Y-6102

Xylol	39.0	TiO ₂	Tall Oil Alkyd	Cobalt
Rule 66-VM&P Naphtha	31.2	Med. Chrome Yellow	Urea	Zirconium
V M & P Naphtha	16.5	Molybdate Orange		
Solvesso 100	10.7			
Iso Butyl Alcohol	2.6			

100.0

10.8

10.8

1.7

601-M-2940-C

V M & P Naphtha	59.0	TiO ₂	Tall Oil Alkyd	Manganese
Xylol	10.5	Lithol Rubine	Linseed Alkyd	Cobalt
Solvesso 100	16.0	Red Iron Oxide		Lead
Mineral Spirits	14.5			

Rene

SOLVENT% WT.PIGMENTRESINDRIER641-L-7B

Mineral Spirits	67.2	TiO ₂	Soya Oil Alkyd	Manganese
V M & P Naphtha	6.0	Iron Blue		Cobalt
Toluol	6.0			Lead
Xylol	20.8			

641-L-16

Mineral Spirits	66.2	TiO ₂	Soya Oil Alkyd	Manganese
V M & P Naphtha	31.0	Ultramarine Blue		Cobalt
Xylol	2.8			Lead

641-G-16

Mineral Spirits	69.3	Chrome Green	Soya Oil Alkyd	Manganese
Xylol	30.7		Zinc Resinate	Zinc

601-G-5924-B

Mineral Spirits	63.4	TiO ₂	Tall Oil Alkyd	Manganese
V M & P Naphtha	23.4	Chrome Green	Soya Oil Alkyd	Lead
Xylol	13.2	Phthalo Blue		



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#1 and #2 Incinerators
Page 2

volume of 705 cu.ft (in #2 of 564). The cross-section is 30 sqft in #1 (in #2 24 sqft). The afterburner is equipped with 6 burners (NA 223G-7A) rated at a total of 15,000,000 btu/hour.

At full fire with maximum combustibles on the drums, the probable gas flow from the combustion process would relate to consumption of 48,234,000 btu/hour. A Stoichiometric combustion of this would result in a gas flow of about 8850 scfm (147 scfs). At 1400°F the flow would be (with 20% excess air) 633 sqft/sec which equals 21.1 ft/sec velocity in the #1 chamber (in #2 26.4'/sec) which is within design criteria (AP40 page 490).

The retention time in #1 will be 1.39 second (in #2 - .94 sec). If excess air is increased to 50% the flow will be 788.7 cuft/sec; velocity will be 26.3 ft/sec; retention time 1.1 seconds in #1 and in #2 - 32.9 ft/sec with retention time of .76 seconds.